STATEMENT OF BASIS

Title V Air Quality Permit Renewal

NuStar Pipe Line Operating Partnership, L.P.
Aberdeen, South Dakota

South Dakota Department of Environment and Natural Resources

TABLE OF CONTENTS

1.0 BACKGROUND

On March 9, 1998, Valero Pipe Line Operating Partnership, LP (formerly Kaneb Pipeline Operating Partnership) was issued a Title V air quality permit (28.9905-03) for its bulk petroleum marketing terminal in Aberdeen, South Dakota. The permit was modified on November 9, 1998 to reflect changes in permit conditions. On June, 7, 1999, a permit amendment to change the contact information was issued. On July 2, 2001, a minor amendment for tank changes was approved. On November 19, 2006, a minor permit amendment to change the loading rack configuration was issued. On March 31, 2008, Valero notified the department that they would now be known as NuStar Pipeline Operating Partnership, LP.

A renewal of the Title V operating permit was issued on November 28, 2006 – the permit expires on November 28, 2011. Permit condition 4.2 states that if a timely and complete application for permit renewal is submitted six months prior to the date of expiration, then the existing permit shall not expire and the conditions of that permit shall remain in effect until the Secretary takes final action on the permit renewal application. There have been no complaints or violations filed against this facility since the last permit review.

2.0 OPERATIONAL DESCRIPTION

NuStar is a refined petroleum pipeline terminal. The facility handles refined petroleum products, including, propane, unleaded regular gasoline, unleaded premium gasoline, #2 fuel oil, #1 fuel oil, diesel and interface. The terminal receives the petroleum liquids through a pipeline network. The Primary Standard Industrial Classification (SIC) Code is 4613.

2.1 Operational Equipment

Table 2-1 lists the existing equipment permitted and covered by NuStar's Title V air quality operating permit #28.9905-03 issued November 28, 2006.

Table #2-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Capacity
#1	Transport top loading rack. During the term of this permit, the loading arm for the transport loading rack may be moved to a bottom loading location.	Not applicable
#2	Soil vapor extraction system	Not applicable
#3	02-37 – Aboveground storage tank, fixed roof	76,272 gallons
#4	05-16 – Aboveground storage tank, internal floating roof	183,960 gallons
#5	10-20 – Aboveground storage tank, internal floating roof	387,408 gallons
#6	10-27 – Aboveground storage tank, internal floating roof	361,998 gallons
#7	15-08 – Aboveground storage tank, fixed roof	611,646 gallons
#8	15-09 – Aboveground storage tank, fixed roof	611,772 gallons

Unit	Description	Maximum Capacity
#9	15-14 – Aboveground storage tank, fixed roof	604,296 gallons
#10	15-15 – Aboveground storage tank, fixed roof	600,936 gallons
#11	20-06 – Aboveground storage tank, fixed roof	817,572 gallons
#12	20-09 – Aboveground storage tank, fixed roof	809,088 gallons
#13	20-12 – Aboveground storage tank, internal floating roof	811,314 gallons
#14	35-02 – Aboveground storage tank, internal floating roof	1,356,180 gallons

Three tanks have varying volumes within the renewal application due to internal floating roofs within the tanks. Tank 05-16 shows a volume of 171,318 gallons in the Storage Tanks Application Form and a value of 183,960 gallons in the 2010 Operational Report section. Tank 10-20 shows a volume of 362,754 gallons in the Storage Tanks Application Form and a value of 387,408 gallons in the 2010 Operational Report section. Tank 20-12 shows a volume of 769,020 gallons in the Storage Tanks Application Form and a value of 811,314 gallons in the 2010 Operational Report section. It was decided for consistency purposes to use the larger number that was used to calculate emissions in the Operational Report.

2.2 Requested Action

NuStar has requested the following modifications to its permit. Revise Table 2-1 to reflect that the configuration of the loading rack has been changed from top loading to bottom loading. Also, Unit #2, the soil vapor extraction unit has been shut down as the result of DENR issuing a No Further Action closure for the site on December 3, 2009. NuStar has requested that Unit #3, (Tank 02-37) be restricted from storing gasoline. The tank is greater than 19,813 gallons and is subject to Subpart BBBBBB. This requires a corresponding change in the Subpart R screening equation - change the T_f term designating the number of fixed roof tanks in gasoline service from one (1) to zero (0).

The request to reduce the number of fixed roof tanks in gasoline storage will be reflected in the permit. Tank 2-37 shall be restricted to only storing distillate and ethanol fuel.

3.0 PERMIT REQUIREMENTS

3.1 New Source Performance Standards

DENR reviewed the new source performance standards (NSPS) and determined that the following may be applicable to this facility.

3.1.1 Standards Applicable to Storage Tanks

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and
3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

The twelve storage tanks were constructed prior to applicability dates. Therefore, NuStar is not subject to any of the three NSPS.

3.1.2 ARSD 74:36:07:23 – 40 CFR Part 60, Subpart XX

DENR reviewed the Standards of Performance for Bulk Gasoline Terminals to determine if it is applicable to NuStar's operation. This NSPS is applicable if:

1. The provisions of this subpart are applicable to the total of all the loading racks at a bulk gasoline terminal which deliver liquid product into gasoline tank trucks; and
2. The construction or modification of the loading rack commences after December 17, 1980.

NuStar's bulk truck loading terminal was originally constructed in 1965. In 2006, the loading rack was reconfigured from a top loading rack to a bottom loading rack. As noted in the September 2006 review, the switching from a top loading rack to a bottom loading did not increase the hourly emission rates and did not exceed 50% of the replacement cost of a new loading rack. Therefore, the switch was not considered a modification or reconstruction and was not subject to this subpart.

3.2 New Source Review

The Administrative Rules of South Dakota (ARSD) 74:36:10:01 notes that new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. NuStar's operations are located near Aberdeen, South Dakota, which is in attainment for all the pollutants regulated under the Clean Air Act. Therefore, NuStar is not subject to new source review.

3.3 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);

4. Sulfur dioxide (SO_2);
5. Nitrogen oxides (NOx);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated pollutant. The major source threshold for all other sources is 250 tons per year of any regulated pollutant. One of the 28 source categories listed is "petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels." Under the PSD program petroleum refers to unrefined crude oils. The facility stores only refined petroleum fuels, and less than 300,000 barrels; therefore, the PSD threshold for this facility is 250 tons per year.

NuStar's Aberdeen facility was constructed in 1964 prior to the promulgation of the PSD program and was not required to obtain a PSD permit (grandfathered). However, any modification that occurs at this facility must be reviewed to determine if it is considered a major modification and subject to a PSD review.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the "Tailoring Rule."

On May 13, 2010, EPA issued the final version of the "Tailoring Rule" for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;

3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

3.3.1 Emission Factors

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

3.3.2 Potential Uncontrolled Emissions

Potential uncontrolled emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming the unit operates every hour of every day of the year. Potential uncontrolled emissions are not realistic of the actual emissions and are used only to identify which air quality permit and the requirements NuStar must meet.

3.3.3 Loading Rack

Loading rack emissions occur primarily as a result of the loading of transport tanks with gasoline. The dry tanks contain vapor from the previous load. As the tank fills, these vapors are displaced and vented to the vapor collection unit. Because of the low volatility of distillate oils, negligible amounts of vapor remain in transport tanks previously filled with these products.

Volatile organic compound emissions from the loading rack are estimated based upon the gasoline throughput and a loading loss emission factor calculated using Equation 3.1, AP-42, 5.2, June 2008.

Equation 3.1 – Loading Loss

$$L_L = \left(2.46 \times \left(\frac{S \times P \times M}{T}\right)\right)$$

Where:

L_L = loading loss in pounds per 1000 gallons
S = saturation factor
P = true vapor pressure of liquid loaded in pounds per square inch
M = molecular weight of bapors in pounds per pound-mole
T = temperature of liquid loaded in Rankin

Throughput data for the loading rack was provided in the 2011 renewal application. This data is summarized in Table 3-1 below and used to calculate emissions.

Table 3-1 – Potential Uncontrolled Loading Rack Emissions

	Gasoline	Distillate	Denatured Ethanol
Modeled Throughput (gallons per year)	91,250,000	127,750,000	4,562,500
S = saturation factor	0.6	0.6	0.6
P = true vapor pressure (pounds per square inch)	4.44	0.0076	0.4893
M = molecular weight (pounds per pound mole)	63.33	130	51.26
T = Temperature (Rankin)	504.8	504.8	504.8
L_L = loading loss (pounds per 1000 gallons)	4.16	0.015	0.37
VOC emissions (tons per year)	189.8	1.0	0.84
Total VOC emissions (tons per year)	191.6		

3.3.4 Storage Tanks

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results from Tanks 2-37, 5-16, 10-20, 10-27, 15-8, 15-9, 15-14, 15-15, 20-6, 20-9, 20-12, and 35-2, are summarized in Table 3-2.

Table 3-2 Storage Tank VOC Data

Unit #	Tank #	VOCs (tons per year)
3	2-37	0.43
4	5-16	1.44
5	10-20	1.64
6	10-27	1.54
7	15-8	0.16
8	15-9	0.16
9	15-14	0.32
10	15-15	0.16
11	20-6	0.17
12	20-9	0.17
13	20-12	1.92
14	35-2	2.36
	Total	**10.5**

3.3.5 Potential Emission Summary

The potential uncontrolled emissions for the tanks and loading rack are summarized in Table 3-3

Table 3-3 Potential Uncontrolled Emissions

Pollutant	Tanks	Loading Rack (tons per year)	Total (tons per year)
Volatile organic compounds	10.5	192	203

NuStar's application does not indicate there would be emissions of particulate matter, sulfur dioxide, nitrogen oxide, carbon monoxide, lead, fluorides, sulfuric acid mist, hydrogen sulfide, reduced sulfur compounds, total reduced sulfur or greenhouse gases. Therefore, the emissions of these regulated pollutants are considered negligible. NuStar's potential emissions are less than the thresholds for the PSD program. Therefore, NuStar is considered a minor source under the PSD program.

3.4 National Emission Standards for Hazardous Air Pollutants

Currently, there are no finalized or promulgated National Emissions Standards for Hazardous Air Pollutants standards applicable to NuStar.

3.5 Maximum Achievable Control Technology Standards

3.5.1 Major versus Area Source

The maximum control technology standards are based upon if a source is considered a major source or an area source for hazardous air pollutants. A major source of a hazardous air pollutants is a facility that has the potent to emit greater than 10 tons of a single hazardous air pollutant or and/or 25 tons of any combination of a hazardous air pollutants. An area source has the potential to emit less than the major source threshold.

DENR will utilize the baseline values for gasoline vapor phase HAP-VOC weight percentages in the listed in Table 11.3-2 of the EPA's January 2001 document *Gasoline Marketing (Stage I and Stage II).*

- Hexane = 1.6 % VOC
- Toluene = 1.3 % VOC
- Benzene = 0.9 % VOC
- 2,2,4-Trimethylpentane = 0.8 % VOC
- Xylene = 0.5 % VOC
- Ethyl Benzene = 0.1 % VOC
- Cumene = 0.05 % VOC
- Total HAPs = 5.25 % VOC

Based on the HAP-VOC percentages above, hexane will be the single HAP emitted in the greatest amount. Table 3-4 identifies the potential hazardous air pollutant emissions

Table 3-4 – Potential Uncontrolled Loading Rack Emissions

	Gasoline	Distillate	Denatured Ethanol

VOC emissions (tons per year)	189.8	0.0	23.6
HAP percentage	5.25%	5.25%	5.25%
Hexane percentage	1.6%	1.6%	1.6%
HAP total (tons per year)	9.9	0.0	1.2
Hexane Total (tons per year)	3.0	0.0	0.4

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results from Tanks 2-37, 5-16, 10-20, 10-27, 15-8, 15-9, 15-14, 15-15, 20-6, 20-9, 20-12, and 35-2, are summarized in Table 3-5.

Table 3-5 Storage Tank HAP Data

Unit #	Tank #	HAPs (tons per year)
3	2-37	0.02
4	5-16	0.08
5	10-20	0.09
6	10-27	0.08
7	15-8	0.01
8	15-9	0.01
9	15-14	0.02
10	15-15	0.01
11	20-6	0.01
12	20-9	0.01
13	20-12	0.10
14	35-2	0.12
	Total	**0.6**

The potential uncontrolled emissions for the tanks and loading rack are summarized in Table 3-6

Table 3-6 Potential Uncontrolled Emissions

Pollutant	Tanks	Loading Rack (tons per year)	Total (tons per year)
Hazardous air pollutants	0.6	11.1	12

NuStar is considered an area source for hazardous air pollutants

3.5.2 ARSD 74:36:08:12 - 40 CFR 63, Subpart R

DENR reviewed the maximum achievable control technology (MACT) standards and determined that ARSD 74:36:08:12 - 40 CFR Part 63, Subpart R – National Emission Standards for Gasoline Distribution Facilities may be applicable. In accordance with ARSD 74:36:08:12, as referenced to 40 CFR § 63.420(a)(1), the owner or operator shall not exceed the value of the parameters listed in Table 4-1 in any 30-day rolling period. DENR used the screening equation in 40 CFR

Part 63, Subpart R (see Equation 4-1) to determine if the Mitchell facility is an area source and not subject to this MACT standard.

NuStar stated in its application that Tank 02-37 (Unit #3) currently stores gasoline. However, this tank is a fixed roof tanks larger than 75 m^3 (19,900 gallons) and does not meet the requirements of 40 CFR 63 Subpart BBBBBB. NuStar has requested that the screening equation (Equation 4-1) be revised to reflect that the number of fixed roof tanks be changed from 1(one) to 0(zero). Also, the E_T term will change from 0.698 to 0.567.

Table 4-1 Values for the E_T Equation

Terminal	CF	T_F	CE	T_E	T_{ES}	T_I	C	K	Q	OE	E_T
Aberdeen	0.161	0	0	0	0	5	4,000	4.52E-06	7,000	1.083	0.853

Equation 4-1 – Area Source Equation for Gasoline Distribution Facilities

$E_T = CF[0.59(T_F)(1\text{-}CE) + 0.17(T_E) + 0.08(T_{ES}) + 0.038(T_I) + 8.5X10^{-6}(C) + KQ] + 0.04(OE)$

Where:

- E_T = Major source applicability factor, if ET>1.0, then source is considered major;
- CF = Fuel factor (1.0 for reformulated, 0.161 for all other gasoline);
- T_F = The number of fixed roof gasoline storage tanks with no internal floating roofs;
- CE = Control efficiency of the vapor processing system on the storage vessels;
- T_E = The number of external floating roof gasoline storage tanks with only primary roof seals;
- T_{ES} = The number of external floating roof gasoline storage tanks with primary and secondary roof seals;
- T_I = The number of fixed roof gasoline storage tanks with an internal floating roof;
- C = The number of pumps, valves, connectors, load arm valves, and open ended lines in gasoline service;
- K = 4.52E-6 for racks without vapor collection and processing systems;
- Q = Federally enforceable gasoline throughput limit in barrels/day (convert to liters/day); and
- OE = Total HAP from other emission sources not specified by the other parameters (miscellaneous sources).

The total emissions, as calculated by the screening equation, for the gasoline distribution facility are less than 1.0. Therefore, NuStar is considered an area source and this MACT standard is not applicable.

3.5.3 74:36:08:12 – 40 CFR 63, Subpart BBBBBB

DENR reviewed the maximum achievable control technology standards and determined that 40 CFR 63 Subpart BBBBBB may be applicable. This standard applies to each area source bulk gasoline terminal, pipeline breakout station, pipeline pumping station, and bulk gasoline plant.

The emission sources to which this subpart applies are gasoline storage tanks, gasoline loading racks, vapor collection-equipped gasoline cargo tanks, and equipment components in vapor or liquid gasoline service that meet the criteria specified in Tables 1 through 3 to this subpart.

Existing affected sources must comply with the standards in this subpart no later than January 10, 2011. NuStar is considered an existing facility and is subject to this subpart.

NuStar's initial notification notes that an internal floating roof will be used to meet the applicable requirements. The permit will be tailored with this compliance methodology.

3.6 State Requirements

Any source operating in South Dakota that meets the definition of a major source under the ARSD 74:36:05:03 is required to obtain a Title V air quality permit. NuStar is considered a major source and is required to have a Title V air quality permit.

3.6.1 State Emission Limits

The state established total suspended particulate and sulfur dioxide emission limits for facilities operating in South Dakota. There are no regulatory limits for volatile organic compound emissions. The total suspended particulate and sulfur dioxide emission limits are found in ARSD 74:36:06. NuStar does not operate any sources emitting either total suspended particulate or sulfur dioxide. Therefore, the state's total suspended particulate and sulfur dioxide emission limits are not applicable.

ARSD 74:36:12:01 states that an owner or operator may not discharge into the ambient air from a single emission unit an air pollutant of a density equal to or greater than 20 percent opacity. However, the opacity limit is still applicable.

3.6.2 Compliance Assurance Monitoring

Compliance assurance monitoring is applicable to permit applications received on or after April 20, 1998, from major sources applying for a Title V air quality permit. NuStar's application was received after April 20, 1998. Therefore, compliance assurance monitoring is applicable to any unit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

NuStar does not operate any units meeting any of the above criteria. Therefore, compliance assurance monitoring is not applicable because the monitoring, record keeping and reporting requirements are sufficient in the New Source Performance Standards to ensure compliance.

3.6.3 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to Title V of the federal Clean Air Act. Opacity from the storage tanks and loading rack are negligible. Therefore, periodic monitoring for opacity is not required. Periodic monitoring for the storage tanks and loading rack shall consist of the recordkeeping and

reporting requirements in the New Source Performance Standards and Maximum Achievable Control Technology Standards that are applicable to NuStar.

3.7 Summary of Applicable Requirements

Based on the above findings, NuStar will be classified as a major source under the Title V air quality permit program. A major source is one that has the potential to emit over 100 tons per year of a particular pollutant. NuStar will be required to operate within the requirements stipulated in the following regulations:

- ARSD 74:36:05 – Operating Permits for Part 70 Sources;
- ARSD 74:36:07 – New Source Performance Standards;
- ARSD 74:36:08 – Maximum Achievable Control Technology Standards;
- ARSD 74:36:11 - Performance Testing;
- ARSD 74:36:12 - Control of Visible Emissions;
- ARSD 74:37:01 - Air Emission Fees.

4.0 RECOMMENDATION

Based on information DENR received in the permit application, NuStar's Title V air quality permit may be renewed. Any questions on this review should be directed to Keith Gestring, Engineer, with the Department of Environment and Natural Resources.